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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/467,972 | 12/21/1999 | SATOSHI KUROYANAGI | 1046.1206/JD | 3079 |

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STAAS & HALSEY LLP
700 11TH STREET, NW
SUITE 500
WASHINGTON, DC 20001

EXAMINER

SEDIGHIAN, REZA

ART UNIT PAPER NUMBER

2633

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/467,972

Applicant(s)

KUROYANAGI ET AL.

Examiner

M. R. Sedighian

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,9 and 10 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. This communication is responsive to applicant's 12/21/99 preliminary amendment in the application of Kuroyanagi et al. for "Optical Path Cross Connect System with High Expanding Characteristic" filed 12/21/99. The amendments have been entered. Claims 1-10 are now pending.

2. The abstract of the disclosure is objected because the abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words.

Correction is required. See MPEP § 608.01(b).

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "a regenerator constructed of both an opto-electric converter and an electro-optical converter at any one of an input and an output of an optical space switch" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 3-4 and 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 3, it is not clear what is meant by "... an optical branching unit provided with each of said inter-office transmission line, for branching a wavelength-multiplexed optical signal entered from said intra-office transmission line ...". Figure 4 shows first and second optical branch units for branching a plurality of wavelength-multiplexed optical signal received from the inter-office transmission lines, not from the intra-office transmission lines. Apparently the signals from the intra-office transmission lines are routed to different routing units, not to the branching units.

As to claim 9, it recites the limitation "said optical space switch" in lines 6-7. There is insufficient antecedent basis for this limitation in the claim. Furthermore, it is not clear what it means by "... in said intra-office signal input unit and said inter-office signal output unit, a regenerator constructed of both an opto-electric converter and electric-optical converter is employed at any one of an input of said optical space switch and output thereof." It is not clear where the opto-electric converter and electric-optical converter is employed. What does it mean by an opto-electric converter and electric-optical converter is employed at any one of an input of the optical space switch and output thereof.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiragaki et al. (US patent No: 6,115,517) in view of Kuroyanagi et al. (US patent No: 6,072,610).

Regarding claims 1, and 3 as it is understood, Shiragaki discloses an optical path cross connect device (col. 10, lines 62-67 and 599, fig. 5) for accommodating a plurality of inter-office transmission line (col. 11, lines 5 and 50₁, 50₂, fig. 5) with wavelength multiplexing (λ_1 - λ_m , fig. 5) and an intra-office transmission line (50_n, fig. 5), comprising: a plurality of wavelength branching units (511, 512, fig. 5) for demultiplexing the optical signals to a first optical path group (col. 7, lines 21-22, col. 11, lines 5-8), an intra-office signal input unit (51n, fig. 5) for repeating a wavelength multiplexed optical signal to a first optical path group (col. 11, lines 13-15), "m" pieces of routing units (521-1, 521-2, and 531-1, 531-2, fig. 5) for inputting thereto an optical signal outputted from the branch units (511, 512, fig. 5) and for converting (551-1, 552-2, fig. 5) the optical input signal into a predetermined wavelength to thereby output the wavelength-converted optical signal to a second optical path (col. 11, lines 7-12), wherein the "m" pieces of routing units (521-1, 521-2, and 531-1, 531-2, fig. 5) being subdivided in a unit of at least "n" wavelengths (col. 11, lines 57-61), a plurality of wavelength combining unit (561, 562, fig. 5) for selectively multiplexing the optical signal (col. 11, lines 10-11), and an intra-office output unit (56n, fig. 5) for accommodating thereinto the second optical path group and for selectively repeating the optical signal (col. 11, lines 10-12). Shiragaki differs from the claimed invention in that Shiragaki does not specifically disclose the intra-office input unit is used for repeating a non-multiplexed optical signal. Shiragaki discloses optical units (511, 512, 51n, fig. 5) that can

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function as demultiplexers (col. 7, lines 21-22) or branch units for branching the power of input light to n parts (col. 11, lines 4-6). Therefore, it would have been obvious to an artisan at the time of invention to incorporate one of the branch units of Shiragaki as an intra-office unit for repeating the input optical signal which can be a multiplex or a non-multiplex optical signal to further reroute the signals to different destinations for further signal processing. Kuroyanagi discloses an optical transmission system (col. 11, lines 56-60 and fig. 5), wherein an intra-office input unit (40, fig. 5) is provided with intra-office transmission line (col. 11, lines 60-61) for repeating a non-multiplex optical signal (col. 11, lines 61-62). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical branch unit such as the one of Kuroyanagi for one of the branch units in the optical switching network of Shiragaki in order to repeat an input non-multiplex optical signal such as an auxiliary information signal, or a control signal to further reroute such signals to different destinations for further signal processing and control.

Regarding claims 2 and 4, Shiragaki discloses the optical signal transferred to the intra-office transmission line (50n, fig. 5) is wavelength multiplexed (λ_1 - λ_m , fig. 5) and both the intra-office input unit (51n, fig. 5) and intra-office output unit (56n, fig. 5) repeat the wavelength-multiplexed optical signal (λ_1 - λ_m , 57n, fig. 5).

Regarding claim 10, Shiragaki discloses a plurality of optical path cross-connect devices (511, 512, 521-1, 521-2, 52n-m, 531-1, 531-2, 53n-m, fig. 5) are employed to constitute the network (599, fig. 5).

7. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiragaki et al. (US patent No: 6,115,517) in view of Kuroyanagi et al. (US patent No: 6,072,610) and in further view of Suzuki et al. (US patent No: 5,005,166).

Regarding claim 5, the combination of Shiragaki and Kuroyanagi further differs from the claimed invention in that Shiragaki and Kuroyanagi do not disclose the intra-office input and output units each constituted by an optical space switch. Suzuki discloses an optical transmission system (fig. 10) that is comprised of inter-office transmission lines (1-1, 1-2, fig. 10), an intra-office transmission line (1-n, fig. 10), wavelength branching units (11-1, 11-2, fig. 10), an intra-office signal input unit (10A-n, 11-n, fig. 10), a plurality of routing units (S1-1, S2-1 and G1-1, G2-1, fig. 10), wavelength combining units (12-1, 12-2, fig. 10) and an intra-office output unit (12-n, 10B-n, fig. 10), wherein the intra-office input (10A-n, 11-n, fig. 10 and 20, fig. 11) and output unit (12-n, 10B-n, fig. 10 and 20, fig. 11 and 40, fig. 12) each constituted by an optical space switch (24-1, fig. 20, note that each wavelength and time switching stages 10A-n and 10B-n shown in fig. 10, is constituted by an optical space switch 24-1, shown in fig. 11). Therefore, it would have been obvious to an artisan at the time of invention to incorporate an optical branch and switch unit such as the one of Suzuki for one of the input and output branch units in the modified optical switching network of Shiragaki and Kuroyanagi in order to provide a multistage configuration for the transmission and switching of optical signals with the same, or different wavelengths along different output waveguides to different destinations.

Regarding claim 6, Suzuki further discloses the intra-office input unit (10A-n, 11-n, fig. 10 and 20, fig. 11) is arranged by a wavelength division demultiplexer (21, fig. 11) and an optical space switch (24-1, fig. 11) and the intra-office output unit (12-n, 10B-n, fig. 10 and 20, fig. 11

and 40, fig. 12) is arranged by an optical switch (43, fig. 12), a wavelength converter (45-1, fig. 12) and a multiplexer (46, fig. 12).

8. Claims 7-8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Huber et al. (US patent No: 6,005,698) is cited to show optical demultiplexers (WID1, WIDN, fig. 2), multi-stage optical switches (RK, fig. 2) with wavelength converters (λ_i/λ_m , fig. 2) and wavelength multiplexers (WIM1, WIMN, fig. 2).

Nishio (US patent No: 5,194,977) is cited to show optical demultiplexers (14-1, 14-2, fig. 2), optical switches (15-1, 15-2, fig. 2) with wavelength converters (17-1, 17-2, fig. 2) and wavelength multiplexers (18-1, 18-2, fig. 2).

Alferness et al. (US patent No: 5,627,925) is cited to show optical demultiplexers (120a, 120b, fig. 5 and 72, fig. 7c), optical switches (180a, 180b, fig. 5 and 74, fig. 7c), wavelength converters (200a, 200b, fig. 5 and 76, fig. 7c) and wavelength multiplexers (160a, 160b, fig. 5 and 78, fig. 7c).


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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (703) 308-9063.

The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.


JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600